

Bay-Delta Standards

DRAFT

Contained in D-1485, D-1422 and the Winter-Run & Delta Smelt Biological Opinions and in conformance with the 12/15/94 Principles for Agreement

E-021136

CRITERIA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
FLOW/OPERATIONAL												
• Fish and Wildlife												
SWP/CVP Export Limits				1,500cfs ^[1]								
Export/Inflow Ratio ^[2]	65%		35% of Delta Inflow ^[3]					65% of Delta Inflow				
Minimum Delta Outflow	[4]							3,000 - 8,000 cfs ^[4]				
Striped Bass Survival					2,900-14,000 cfs ^[5]							
Suisun Marsh ^[6]												
Habitat Protection Outflow			7,100 - 29,200 cfs ^[7]									
Salinity Starting Condition ^[8]												
River Flows:												
@ Rio Vista									3,000 - 4,500 cfs ^[9]			
Salmon Migration						1,000 - 5,000 cfs ^[10]						
@ Vernalis - Base		710 - 3,420 cfs ^[11]			[11]							
- Pulse				[12]					+28TAF			
Delta Cross Channel Gates	[13]		Closed		[14]					Conditional ^[13]		
WATER QUALITY STANDARDS												
• Municipal and Industrial												
All Export Locations								≤ 250 mg/l Cl				
Contra Costa Canal								150 mg/l Cl for the required number of days ^[15]				
• Agriculture												
Western/Interior Delta								Max. 14-day average EC mmhos/cm ^[16]				
Southern Delta ^[20]		1.0 mS				30 day running avg EC 0.7 mS				1.0 mS		
• Fish and Wildlife												
San Joaquin River Salinity ^[17]						14-day avg; 0.44						
Suisun Marsh Salinity ^[18]	12.5 EC	8.0 EC		11.0 EC					19.0	[19]	15.5	

LEGEND

Implemented under ESA Biological Opinions for Winter-Run Salmon and Delta Smelt
Implemented under SWRCB D-1485 and D-1422 as revised June 8, 1995

[#] See Footnotes

Footnotes

- [1] Maximum 3-day running average of combined export rate (cfs) which includes Tracy Pumping Plant and Clifton Court Forebay inflow less Byron-Bethany pumping.

Year Type	All
Apr15 - May15*	The greater of 1,500 or 100% of 3-day avg. Vernalis flow

* This time period may need to be adjusted to coincide with fish migration. Maximum export rate may be varied by CalFed Op's group.

- [2] The maximum percentage of average Delta inflow (use 3-day average for balanced conditions with storage withdrawal, otherwise use 14-day average) diverted at Clifton Court Forebay (excluding Byron-Bethany pumping) and Tracy Pumping Plant using a 3-day average. (These percentages may be adjusted upward or downward depending on biological conditions, providing there is no net water cost.)

- [3] The maximum percent Delta inflow diverted for Feb may vary depending on the January 8RI.

Jan 8RI	Feb exp. limit
\$1.0 MAF	45%
between 1.0 & 1.5 MAF	35%-45%
> 1.5 MAF	35%

- [4] Minimum monthly average Delta outflow (cfs). If monthly standard = 5,000 cfs, then the 7-day average must be within 1,000 cfs of standard; if monthly standard > 5,000 cfs, then the 7-day average must be = 80% of standard.

Year Type	All	W	AN	BN	D	C
Jan	4,500*					
Jul		8,000	8,000	8,500	5,000	4,000
Aug		4,000	4,000	4,000	3,500	3,000
Sep	3,000					
Oct		4,000	4,000	4,000	4,000	3,000
Nov-Dec		4,500	4,500	4,500	4,500	3,500

* Increase to 5,000 if the Dec 8RI is greater than 800 TAF

- [5] Minimum average Delta outflow (cfs) for period.

Year Type	W	AN	BN	Subnormal snowmelt*	D	C
May-J1	14,000	14,000	11,400	8,500	4,300	3,300
Jun	14,000	10,700	9,500	5,400	3,800	3,100
Jul	10,000	7,700	6,500	3,800	3,200	2,900

* Subnormal Snowmelt category applies to Wet, Above Normal, and Below Normal water year classifications only.

- [6] The water quality standards for fish and wildlife set forth in Water Right Decision 1485 (D-1485), Table II, for striped bass spawning, Suisun Marsh, and operational constraints (export rates and Delta Cross Channel gate operations) are replaced with those contained in Attachment B of Order WR 95-8.

- [7] Minimum 3-day running average of daily Delta outflow of 7,100 cfs OR: either the daily average or 14-day running average EC at Collinsville is less than 2.64 mmhos/cm (This standard for March may be relaxed if the Feb 8RI is less than 500 TAF. The standard does not apply in May and June if the May estimate of the SRI is < 8.1 MAF at the 90% exceedence level in which case a minimum 14-day running average flow of 4,000 cfs is required.) For additional Delta outflow objectives, see TABLE A.

- [8] February starting salinity: If Jan 8RI > 900 TAF, then the daily or 14-day running average EC @ Collinsville must be = 2.64 mmhos/cm for at least one day between Feb 1-14. If Jan 8RI is between 850 TAF and 900 TAF, then the CalFed Op's group will determine if this requirement must be met.

- [9] Rio Vista minimum monthly average flow rate in cfs (the 7-day running average shall not be less than 1,000 below the monthly objective).

Year Type	All	W	AN	BN	D	C
Sep	3,000					
Oct		4,000	4,000	4,000	4,000	3,000
Nov-Dec		4,500	4,500	4,500	4,500	3,500

- [10] Rio Vista minimum 30-day running average flow rate in cfs.

Year Type	W	AN	BN	D	C
Jan	2,500	2,500	2,500	1,500	1,500
Feb-Mar15	3,000	2,000	2,000	1,000	1,000
Mar16-Jun15	5,000	3,000	3,000	2,000	2,000
Jul	3,000	2,000	2,000	1,000	1,000
Aug	1,000	1,000	1,000	1,000	1,000
Sep-Dec	5,000	2,500	2,500	1,500	1,500

- [11] BASE Vernalis minimum monthly average flow rate in cfs (the 7-day running average shall not be less than 20% below the objective). Take the higher objective if X2 is required to be west of Chipps Island.

Year Type	All	W	AN	BN	D	C
Feb-Apr14 and May15-Jun		2,130 or 3,420	2,130 or 3,420	1,420 or 2,280	1,420 or 2,280	710 or 1,140

- [12] PULSE Vernalis minimum monthly average flow rate in cfs. Take the higher objective if X2 is required to be west of Chipps Island.

Year Type	All	W	AN	BN	D	C
Apr15 - May15		7,330 or 8,620	5,730 or 7,020	4,820 or 5,480	4,020 or 4,880	3,110 or 3,540
Oct	1,000*					

* Up to an additional 28 TAF pulse/attraction flow to bring flows up to a monthly average of 2,000 cfs except for a critical year following a critical year. Time period based on real-time monitoring and determined by CalFed Op's group.

- [13] For the Nov-Jan period, Delta Cross Channel gates may be closed for up to a total of 45 days.

- [14] For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days per CALFED Op's group. During the period the Delta cross channel gates may close 4 consecutive days each week, excluding weekends.

- [15] Minimum # of days that the mean daily chlorides = 150 mg/l must be provided in intervals of not less than 2 weeks duration. Standard applies at Contra Costa Canal Intake or Antioch Water Works Intake.

Year Type	W	AN	BN	D	C
# Days	240	190	175	165	155

- [16] The maximum 14-day running average of mean daily EC (mmhos/cm) depends on water year type.

Year Type	WESTERN DELTA				INTERIOR DELTA			
	San River @ Emuelson	SJR @ Jersey Point	Mokelumne R @ Terminous	SJR @ San Andreas	San River @ Emuelson	SJR @ Jersey Point	Mokelumne R @ Terminous	SJR @ San Andreas
	0.45 EC from April 1 to date shown	EC value from date shown to Aug15*	0.45 EC from April 1 to date shown	EC value from date shown to Aug15*	0.45 EC from April 1 to date shown	EC value from date shown to Aug15*	0.45 EC from April 1 to date shown	EC value from date shown to Aug15*
W	Aug 15		Aug 15		Aug 15		Aug 15	
AN	Jul 1	0.83	Aug 15		Aug 15		Aug 15	
BN	Jun 20	1.14	Jun 20	0.74	Aug 15		Aug 15	
D	Jun 15	1.87	Jun 15	1.35	Aug 15		Jun 25	0.58
C		2.78		2.20		0.54		0.87

* When no date is shown, EC limit continues from April 1.

- [17] Compliance will be determined between Jersey Point & Prisoners Point. Does not apply in critical years or in May when the May 90% forecast of SRI = 8.1 MAF.

- [18] During deficiency period, the maximum monthly average mhtEC at Western Suisun Marsh stations as per SMDPA is:

Month	mhtEC
Oct	19.0
Nov	18.5
Dec-Mar	15.8
Apr	14.0
May	12.5

- [19] In November, maximum monthly average mhtEC = 18.5 for Western Marsh stations and maximum monthly average mhtEC = 15.5 for Eastern Marsh stations in all periods types.

- [20] Per D-1422, maximum 30-day running average EC for San Joaquin River at Vernalis, San Joaquin River at Brant Bridge, Old River near Middle River, and Old River at Tracy Road Bridge. Revisions may be made when DWR, USBR, and SDWA agree on new contract.

The EC objectives at Old River shall be implemented by 12/31/97.

TABLE A

Number of Days When Max. Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained. (This can also be met with a maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average Delta outflows of 11,400 cfs and 29,200 cfs, respectively.) Port Chicago Standard is triggered only when the 14-day average EC for the last day of the previous month is 2.64 mmhos/cm or less. PMI is previous month's 8RI. If salinity/flow objectives are met for a greater number of days than required for any month, the excess days shall be applied towards the following month's requirement. The number of days for values of the PMI between those specified below shall be determined by linear interpolation.

PMI (TAF)	Chippes Island (Chippes Island Station D10)				
	FEB	MAR	APR	MAY	JUN
500	0	0	0	0	0
750	0	0	0	0	0
1000	28*	12	2	0	0
1250	28	31	6	0	0
1500	28	31	13	0	0
1750	28	31	20	0	0
2000	28	31	25	1	0
2250	28	31	27	3	0
2500	28	31	29	11	1
2750	28	31	29	20	2
3000	28	31	30	27	4
3250	28	31	30	29	8
3500	28	31	30	30	13
3750	28	31	30	31	18
4000	28	31	30	31	23
4250	28	31	30	31	25
4500	28	31	30	31	27
4750	28	31	30	31	28
5000	28	31	30	31	29
5250	28	31	30	31	29
5500	28	31	30	31	30

*When 800 TAF < PMI < 1000 TAF, the number of days is determined by linear interpolation between 0 and 28 days.

PMI (TAF)	Port Chicago (continuous recorder at Port Chicago)				
	FEB	MAR	APR	MAY	JUN
0	0	0	0	0	0
250	1	0	0	0	0
500	4	1	0	0	0
750	8	2	0	0	0
1000	12	4	0	0	0
1250	15	6	1	0	0
1500	18	9	1	0	0
1750	20	12	2	0	0
2000	21	15	4	0	0
2250	22	17	5	1	0
2500	23	19	8	1	0
2750	24	21	10	2	0
3000	25	23	12	4	0
3250	26	24	14	6	0
3500	26	25	16	9	0
3750	26	26	18	12	0
4000	26	27	20	15	0
4250	26	27	21	18	1
4500	26	28	23	21	2
4750	27	28	24	23	3
5000	27	28	25	25	4
5250	27	29	25	26	6
5500	27	29	26	28	9
5750	27	29	27	28	13
6000	27	29	27	29	16
6250	27	30	27	29	19
6500	27	30	28	30	22
6750	27	30	28	30	24
7000	27	30	28	30	26
7250	27	30	28	30	27
7500	27	30	29	30	28
7750	27	30	29	31	28
8000	27	30	29	31	29
8250	28	30	29	31	29
8500	28	30	29	31	29
8750	28	30	29	31	30
9000	28	30	29	31	30
9250	28	30	29	31	30
9500	28	31	29	31	30
9750	28	31	29	31	30
10000	28	31	30	31	30
> 10000	28	31	30	31	30